



AD-A246 260

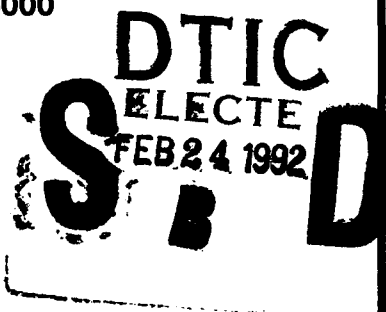


ARMSTRONG
LABORATORY

HAZARDOUS WASTE TECHNICAL ASSISTANCE SURVEY,
HEADQUARTERS 132D TACTICAL FIGHTER WING,
IOWA AIR NATIONAL GUARD,
DES MOINES, IOWA

Chung H. Yen, Captain, USAF, BSC

OCCUPATIONAL AND ENVIRONMENTAL
HEALTH DIRECTORATE
Brooks Air Force Base, TX 78235-5000



December 1991

Final Report for Period 1-2 May 1991

Approved for public release; distribution is unlimited.

92 2 18 170

92-04377



AIR FORCE SYSTEMS COMMAND
BROOKS AIR FORCE BASE, TEXAS 78235-5000

NOTICES

When Government drawings, specifications, or other data are used for any purpose other than in connection with a definitely Government-related procurement, the United States Government incurs no responsibility or any obligation whatsoever. The fact that the Government may have formulated or in any way supplied the said drawings, specifications, or other data, is not to be regarded by implication, or otherwise in any manner construed, as licensing the holder or any other person or corporation; or as conveying any rights or permission to manufacture, use, or sell any patented invention that may in any way be related thereto.

The mention of trade names or commercial products in this publication is for illustration purposes and does not constitute endorsement or recommendation for use by the United States Air Force.

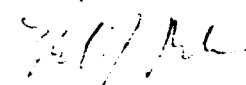
The Office of Public Affairs has reviewed this report, and it is releasable to the National Technical Information Service, where it will be available to the general public, including foreign nationals.

This report has been reviewed and is approved for publication.

Government agencies and their contractors registered with Defense Technical Information Center (DTIC) should direct requests for copies to: DTIC, Cameron Station, Alexandria VA 22304-6145.

Non-Government agencies may purchase copies of this report from: National Technical Information Service (NTIS), 5285 Port Royal Road, Springfield VA 22161.


CHUNG H. YEN, Captain, USAF, BSC
Consultant, Hazardous Waste Function


EDWARD F. MAHER, Lt Col, USAF, BSC
Chief, Bioenvironmental Engineering
Division

REPORT DOCUMENTATION PAGE

Form Approved
OMB No. 0704-0188

Public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302, and to the Office of Management and Budget, Paperwork Reduction Project (0704-0188), Washington, DC 20503.

1. AGENCY USE ONLY (Leave blank)		2. REPORT DATE December 1991		3. REPORT TYPE AND DATES COVERED Final 1-2 May 1991	
4. TITLE AND SUBTITLE Hazardous Waste Technical Assistance Survey, Headquarters 132d Tactical Fighter Wing, Iowa Air National Guard, Des Moines, Iowa				5. FUNDING NUMBERS	
6. AUTHOR(S) Chung H. Yen					
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) Armstrong Laboratory Occupational and Environmental Health Directorate Brooks Air Force Base, TX 78235-5000 (Formerly: AF Occupational and Environmental Health Laboratory (AFOEHL))				8. PERFORMING ORGANIZATION REPORT NUMBER AL-TR-1991-0084	
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)				10. SPONSORING/MONITORING AGENCY REPORT NUMBER	
11. SUPPLEMENTARY NOTES					
12a. DISTRIBUTION/AVAILABILITY STATEMENT Approved for public release; distribution is unlimited.				12b. DISTRIBUTION CODE	
13. ABSTRACT (Maximum 200 words) At the request of the 132d Mission Support Squadron, the Armstrong Laboratory Occupational and Environmental Health Directorate conducted a Hazardous Waste Technical Assistance Survey at HQ 132d Tactical Fighter Wing on 1-2 May 91. The scope of this survey was to address hazardous waste management practices, to explore opportunities for waste minimization, and to determine waste streams. The survey team performed a shop-by-shop determination of hazardous waste streams and met with hazardous waste managers to discuss their waste programs. Recommendations include: (1) Base commander, formally appoint an emergency response coordinator under 40 CFR 262.34. (2) Implement safety and emergency response requirements under 40 CFR 262.34. (3) Base commander assign the current accumulation point manager in writing. (4) Lock all drums at satellite accumulation points. (5) Establish and implement a numerically coded drum tracking system. (6) Continue to provide training for satellite accumulation point/accumulation point managers with emphasis in procedures for storing, handling, and transporting waste on base. (7) Fill the National Guard Bureau funded slot for a full-time environmental coordinator position.					
14. SUBJECT TERMS Hazardous Waste Waste Minimization HQ 132d Tactical Fighter Wing Des Moines, IA				15. NUMBER OF PAGES 32	
				16. PRICE CODE	
17. SECURITY CLASSIFICATION OF REPORT Unclassified	18. SECURITY CLASSIFICATION OF THIS PAGE Unclassified	19. SECURITY CLASSIFICATION OF ABSTRACT Unclassified	20. LIMITATION OF ABSTRACT UL		

TABLE OF CONTENTS

	Page
ACKNOWLEDGMENTS	iv
INTRODUCTION	1
BASE DESCRIPTION	1
HAZARDOUS WASTE MANAGEMENT PROGRAM	1
PROCEDURE	2
OBJECTIVES	2
SUMMARY OF WASTE PRACTICES AT 132 TFW, IOWA ANG.	2
OBSERVATIONS AND RECOMMENDATIONS.....	3
Regulatory Deficiencies at Accumulation Point (AP)	3
Formal Designation of AP Manager.	3
Management of Satellite Accumulation Point (SAP).	4
Tracking of Waste Disposal Drums.	4
Waste Management Accountability.	4
Environmental Coordinator Vacancy.	5
BIBLIOGRAPHY	5
APPENDIX A: Request Letter.	7
APPENDIX B: Hazardous Waste Technical Assistance Survey Shop Supervisor Interview Form.	11
APPENDIX C: Disposal Practices by Shop at 132 TFW, Iowa ANG.	15
APPENDIX D: Summary of Waste Disposal Practices for Each Waste Category.	19
APPENDIX E: Master List of Shops	23

ACKNOWLEDGMENTS

The author wishes to thank the personnel at 132 TFW, Iowa Air National Guard, who provided information and logistics support during this survey. 2Lt John Kabitzke, Base Environmental Coordinator, and MSgt Zickel and TSgt Palmer, Base Accumulation Point Managers, provided valuable information on the management of the hazardous waste program. Special thanks are given to TSgt Grove, Base Bioenvironmental Engineering Technician, for his escort support during shop visits and providing his corporate knowledge on the waste accumulation and handling practices on base.



Accession For	
NTIS GRA&I	<input checked="checked" type="checkbox"/>
DTIC TAB	<input type="checkbox"/>
Unannounced	<input type="checkbox"/>
Justification	
By	
Distribution/	
Availability Codes	
Dist	Avail and/or Special
A-1	

**HAZARDOUS WASTE TECHNICAL ASSISTANCE SURVEY,
HEADQUARTERS 132D TACTICAL FIGHTER WING,
IOWA AIR NATIONAL GUARD, DES MOINES, IOWA**

INTRODUCTION

On 5 Oct 90, the 132d Mission Support Squadron of the 132d Tactical Fighter Wing (132 TFW), Iowa Air National Guard (ANG), requested the Air Force Occupational and Environmental Health Laboratory* to conduct a Hazardous Waste Technical Assistance Survey at HQ 132 TFW, Des Moines (Appendix A). The survey results will be used to improve the base hazardous waste management program. The scope of the survey is to address hazardous waste management practices and evaluate opportunities for waste minimization.

The survey was conducted by Capt Patrick T. McMullen and Capt Chung H. Yen during 1-2 May 91.

BASE DESCRIPTION

HQ 132 TFW, Iowa ANG, is located on the northwest acreage of the Des Moines International Airport (IAP). HQ 132 TFW is responsible for the maintenance and the flying operation of an A-7D/K squadron. Currently, there are no tenant units physically residing on Iowa ANG basehold at Des Moines IAP.

HAZARDOUS WASTE MANAGEMENT PROGRAM

The hazardous waste management program at HQ 132 TFW, Des Moines IAP, is managed primarily by the Environmental and Contracting Planning Office in Civil Engineering (132 TFW/DEV). Bioenvironmental Engineering Services (BES) helps monitor the program through industrial shop surveys and is responsible for waste sampling at the request of 132 TFW/DEV.

Individual shops are responsible for identifying, segregating, handling, packaging, and labelling the wastes generated by their shop. The wastes are collected at satellite accumulation points (SAP) within the shop vicinity. These wastes are ultimately placed in 55-gallon drums located at an accumulation point (AP) on base.

*The Air Force Occupational and Environmental Health Laboratory has been redesignated Armstrong Laboratory, Occupational and Environmental Health Directorate.

When wastes require disposal, the shop initiates a DD Form 1348-1 for waste turn-in. This is then given to a 132 TFW/DEV representative who processes the form for eventual disposal of wastes via the Defense Reutilization and Marketing Office (DRMO) at Offutt Air Force Base (AFB).

PROCEDURE

The first step of the survey was to review the base hazardous waste management plan and identify shops that are potential generators of hazardous waste streams. Next, 12 industrial shops were visited to observe industrial operations, discuss chemical waste disposal practices with shop supervisors and personnel, and complete interview forms (Appendix B).

The base AP and all SAPs were visited and assessed.

The overall hazardous waste management program was discussed with the following individuals:

2Lt John Kabitzke	Base Environmental Coordinator
MSgt Zickel	Base Accumulation Point Manager
TSgt Palmer	Base Accumulation Point Manager
TSgt Tim Grove	Base Bioenvironmental Engineering Technician

OBJECTIVES

Evaluate management of hazardous waste program.

Identify opportunities for waste minimization.

SUMMARY OF WASTE DISPOSAL PRACTICES AT 132 TFW, IOWA ANG

The waste disposal practices for different categories of wastes are summarized in this section. A shop-by-shop summary of disposal practices is contained in Appendix C.

Waste oils and fluids are accumulated in 55-gallon drums at or near points of generation. Once full, the drums are transported to the AP. These waste are stored until transport for disposal by DRMO at Offutt AFB.

Waste paint, thinners, and strippers are placed in 55-gallon drums, transported to the AP, and stored until disposal by Offutt DRMO.

Soap solutions are rinsed down the drain into the sanitary sewer. In most instances, they run straight into the vicinity creeks at the airport.

Waste penetrants, emulsifiers, developer, and magnetic particle oils from the Nondestructive Inspection (NDI) shop are drummed and disposed of by Offutt DRMO.

Waste fuels consisting of JP-4, mogas, and diesel are accumulated in 55-gallon drums at or near the shop areas. Once full, the drums are transported to the AP. Most fuels are disposed of through Offutt DRMO. However, 132 TFW Fuel Cell Repair recycles 120 gallons of residual JP-4 fuel each year.

Spent and waste batteries are turned in to Offutt DRMO for disposal.

A summary of waste disposal practices for each waste category is shown in Appendix D.

Appendix E is a master list of shops.

OBSERVATIONS AND RECOMMENDATIONS

Regulatory Deficiencies at Accumulation Point (AP)

The hazardous waste AP consists of an uncovered, concrete diked area elevated 18" of sufficient size for base needs. The site is unsecured, open to weather, and without spill response equipment. Moreover, this site does not have an "emergency response coordinator" (with alternate) appointed by the base commander.

REC: To meet safety and emergency response requirements under 40 CFR 262.34 the following is required: posting of emergency response requirements as detailed in 262.34 (d)(5)(ii), formal designation by the base commander of an individual to serve as his "emergency response coordinator," a written program for emergency response at the site, and proper training for all employees who have access to this area.

Though not required by law, for a small quantity generator, it is advantageous for the base to upgrade the AP with a cover and security fencing. The storage drums at the SAP should be secured with locking devices. These measures will help minimize the occurrence of inadvertent and unauthorized mixing of hazardous waste with used oil and spent fuel.

Formal Designation of AP Manager

There is an AP manager who currently assumes operational responsibilities. However, an individual has not been officially appointed by the base commander.

REC: The base commander should assign the present AP manager (with alternate) in writing.

Management of Satellite Accumulation Point (SAP)

The base has several SAPs located near the generation points. There was not a clear understanding as to the identity of the SAP managers. At the time of this visit, there were several drums unsecured. As the drums were not covered, they are exposed to the rain and snow. This exposure could lead to corrosion of the drums and leaking of their contents.

REC: The base commander should assign a SAP manager (and alternate) in writing for each point. The responsibilities for this position are outlined in the base's Hazardous Waste Management Plan. Although not required by law, all drums in the SAP should be secured with a lock assembly. When transferred to the AP, locks and responsibilities will be transferred from the SAP manager to the AP manager. All drums must be protected with a polyethylene drum cover while in storage at the SAP. Additionally, the Field Maintenance SAP building should continue to be used for storage.

Tracking of Waste Disposal Drums

The base has a recurring problem of unmarked drums of waste appearing at the AP or base supply. In the absence of any "User's Knowledge" regarding the contents, the base is required to perform a full hazardous waste analysis at approximately \$1,800/drum. IAW 40 CFR 264, the generator of the waste has the total responsibility for storage, labelling, identification, and transportation of the waste to the AP.

REC: A simple solution to this problem has been implemented at several other installations. A system is established to numerically code all drums used in the shops for waste storage (hazardous and nonhazardous). The number must be assigned and centrally recorded before waste is initially added to a drum. The number is then verified, as it is turned in to the AP.

Waste Management Accountability

The base has not effectively implemented the base Hazardous Waste Management Plan to include proper designation of SAP and provisions for training of these individuals.

REC: The base needs to continue to provide training for SAP/AP managers that addresses procedures for storing, handling, and transporting waste on the base. (Note: Hazardous waste manager training was ongoing during this survey and is expected to address this issue.)

Environmental Coordinator Vacancy

The National Guard Bureau has approved and funded a slot for a full-time environmental coordinator. This slot is currently vacant. Most of the above recommendations would fall under the responsibility of this office.

REC: Considering the regulatory breadth and technical complexity of the environmental program requirements of the 132 TFW, we strongly recommend this position be filled with a competent engineering professional.

BIBLIOGRAPHY

1. United States Environmental Protection Agency, Samplers and Sampling Procedures for Hazardous Waste Streams, EPA-600/2-80-018, Jan 1980.
2. Code of Federal Regulations, Title 29, Labor, Part 1910, Occupational Safety and Health Standards, Section 120, Hazardous Waste Operations and Emergency Response, 1990.
3. Code of Federal Regulations, Title 40, Protection of Environment, Part 261, Identification and Listing of Hazardous Waste, Part 262, Standards Applicable to Generators of Hazardous Waste, and Part 264, Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities, 1990.

APPENDIX A
Request Letter



IOWA AIR NATIONAL GUARD

HEADQUARTERS, 132ND TACTICAL FIGHTER WING
3100 MCKINLEY AVE., DES MOINES, IOWA 50321-2799

TO: 132d MSS/CCE

5 October 1990

SUBJECT: Hazardous Waste Minimization Survey

TO: DCS
CC
NGB/SCB
AF OEHLE/EQH
IN TURN

1. The 132d Tactical Fighter Wing is in the process of trying to reduce or minimize the accumulation of hazardous waste which benefits the environment for everyone. This unit is actively involved in pursuing all avenues available to strengthen the program.

2. We would appreciate your assistance in performing a hazardous waste minimization technical assistance survey at the earliest possible date. TSgt Tim Grove/SCPB can be contacted at 939-8575, Tuesday through Friday to coordinate the survey and handle your needs.

GARY A. FITZGERALD, Capt, Iowa ANG
Mission Support Officer

1st Ind, 132d TFW/DCS

10 October 1990

TO: 132d TFW/CC

Request forwarded for your approval. This survey will be very beneficial to this unit in identifying and minimizing hazardous waste.

HARRY E. CLARK, Major, Iowa ANG
Deputy Commander for Support

2nd Ind, 132d TFW/CC

10 October 1990

TO: NGB/SCB

Request is valid and forwarded for your consideration. This survey will greatly benefit this unit.

DONALD W. ARMINSTON, Col, Iowa ANG
Commander

3rd Ind to 132nd MSS/CCE ltr, 5 Oct 90, Hazardous Waste Minimization Survey

NGB/SGB

2 Nov 90

TO: AFOEHL/EQH

1. This request has been reviewed and discussed with the requesting unit.
2. Your support is once again appreciated, NGB/SGB POC is Lt Col Washeleski or CMSgt Craig, DSN 858-8535



JAMES L. CRAIG, JR., CMSgt, USAF
Supt, Bioenvironmental Engineering

APPENDIX B

**Hazardous Waste Technical Assistance Survey
Shop Supervisor Interview Form**

HAZARDOUS WASTE TECHNICAL ASSISTANCE SURVEY
SHOP SUPERVISOR INTERVIEW FORM

SHOP & OFFICE SYMBOL _____ EXT _____
BUILDING _____ CONTACT _____
MISSION _____

WORKLOAD _____

<u>WASTE STREAM</u>	<u>TYPE/NSN</u>	<u>QTY/MO.</u>	<u>DISPOSAL METHOD</u>
FUEL	_____	_____	_____
7808 MOTOR OIL	_____	_____	_____
SYNTHETIC OIL	_____	_____	_____
FLUIDS (B,T,OR H)	_____	_____	_____
SOLVENTS	_____	_____	_____
WASTE PAINTS (TYPE)	_____	_____	_____
THINNERS (TYPE)	_____	_____	_____
STRIPPERS (TYPE)	_____	_____	_____
SOAPS (dil ratio)	_____	_____	_____
BATTERIES	_____	_____	_____
SPEEDY DRY	_____	_____	_____
SHOP RAGS	_____	_____	_____

O/W SEPARATORS (NO.,USE,CLEANOUT FREQ & DISPOSAL) _____
(ADD INFO ON BACK AS REQ'D)

RECOMMENDATIONS

OTHERS

PENETRANT

EMULSIFIER

ANTIFREEZE

CARBON REMOVER

MAG PARTICLE

DEVELOPER

O/W SLUDGE

ACIDS

TANKS

CHEMICAL

SIZE

CHANGE FREQ

DISPOSAL

MIS.

UST'S

USE

SIZE

LOCATION

PUMP OUT FREQ

LEAK TESTED

APPENDIX C

Disposal Practices by Shop at 132 TFW, Iowa ANG

DISPOSAL PRACTICES BY SHOP AT IOWA AIR NATIONAL GUARD

SHOP: 132 TFW Gun Services

Building: 124

WASTE PRODUCT	QTY (GAL/YR)	DISPOSAL
Carbon Remover	600	DRMO
Safety Kleen	240	CD
Total:	840	

SHOP: 132 TFW NDI

Building: 230

WASTE PRODUCT	QTY (GAL/YR)	DISPOSAL
Penetrant	20	DRMO
Emulsifier	20	DRMO
Developer	50	DRMO
Magnetic Oil	15	DRMO
Total:	105	

SHOP: 132 TFW Electric/Battery

Building: 100

WASTE PRODUCT	QTY (BATTERIES/YR)	DISPOSAL
Ni-Cad	25	DRMO
Lead ACid	30	DRMO
Total:	55	

SHOP: 132 TFW Pneudraulics

Building: 100

WASTE PRODUCT	QTY (GAL/YR)	DISPOSAL
Fluid	174	DRMO
Safety Kleen	180	CD
PD—680 Type II	36	UIP
Total:	390	

SHOP: 132 TFW Phase Maintenance**Building: 100**

WASTE PRODUCT	QTY (GAL/YR)	DISPOSAL
Oil & Fluid	24	DRMO
PD—680 Type II	360	DRMO
Total:	384	

SHOP: 132 TFW Repair and Reclamation**Building: 100**

WASTE PRODUCT	QTY (GAL/YR)	DISPOSAL
Stripper	160	DRMO
SE-377 cleaner	60	DRMO
PD—680 Type II	10	DRMO
Safety Kleen	180	CD
Total:	410	

SHOP: 132 TFW AGE**Building: 104**

WASTE PRODUCT	QTY (GAL/YR)	DISPOSAL
Fuel	12	DRMO
Oil & Fluid	400	DRMO
Soaps	60	SS
Safety Kleen	160	CD
Total:	632	

SHOP: 132 TFW Structural Repair**Building: 315**

WASTE PRODUCT	QTY (GAL/YR)	DISPOSAL
Waste Paint & Thinner	110	DRMO
Total:	110	

SHOP: 132 TFW Fuel Cell Repair

Building: 315

WASTE PRODUCT	QTY (GAL/YR)	DISPOSAL
Fuel	120	REC
Total:	120	

SHOP: 132 TFW A-7 Propulsion

Building: 160

WASTE PRODUCT	QTY (GAL/YR)	DISPOSAL
Fuel	24	DRMO
Oil & Fluid	2,400	DRMO
Safety Kleen	360	CD
PD—680 Type II	30	DRMO
Total:	2,814	

SHOP: 132 TFW Fuel Management

Building: 112

WASTE PRODUCT	QTY (GAL/YR)	DISPOSAL
Fuel	150	DRMO
Petroleum Ether	5	DRMO
Total:	155	

SHOP: 132 TFW Vehicle Maintenance

Building: 105

WASTE PRODUCT	QTY (GAL/YR)	DISPOSAL
Oil & Fluid	720	DRMO
Thinners	660	DRMO
A/C Soap	360	SS
Batteries	24 Batteries/YR	DRMO
Safety Kleen	120	CD
Total:	1,884	

LEGEND: DRMO denotes Defense Reutilization and Marketing Office

SS denotes Sanitary Sewer

CD denotes Contractor Disposal

REC denotes Recycled

UIP denotes Used In Process

APPENDIX D

Summary of Waste Disposal Practices for Each Waste Category

**SUMMARY OF WASTE DISPOSAL PRACTICES FOR
EACH WASTE CATEGORY**

WASTE: FUEL

SHOP	WASTE	QTY (GAL/YR)	DISPOSAL
132 TFW AGE	Fuel	12	DRMO
132 TFW Fuel Cell Repair	Fuel	120	REC
132 TFW A-7 Propulsion	Fuel	24	DRMO
132 TFW Fuel Management	Fuel	150	DRMO
Total:		306	

WASTE: OIL & FLUID

SHOP	WASTE	QTY (GAL/YR)	DISPOSAL
132 TFW NDI	Mag Oil	15	DRMO
132 TFW Pseudraulics	Fluid	174	DRMO
132 TFW Phase Maintenance	Oil & Fluid	24	DRMO
132 TFW AGE	Oil & Fluid	400	DRMO
132 TFW A-7 Propulsion	Oil & Fluid	2,400	DRMO
132 TFW Vehicle Maintenance	Oil & Fluid	720	DRMO
Total:		3,733	

WASTE: DEGREASERS/CLEANERS

SHOP	WASTE	QTY (GAL/YR)	DISPOSAL
132 TFW Pseudraulics	PD-680 Type II	36	UIP
132 TFW Phase Maintenance	PD-680 Type II	360	DRMO
132 TFW Repair & Reclama	PD-680 Type II	10	DRMO
132 TFW A-7 Propulsion	PD-680 Type II	30	DRMO
132 TFW Repair & Reclama	SE-377 Cleaner	60	DRMO
132 TFW Gun Services	Safety Kleen	240	CD
132 TFW Pseudraulics	Safety Kleen	180	CD
132 TFW Repair & Reclama	Safety Kleen	180	CD
132 TFW AGE	Safety Kleen	160	CD
132 TFW A-7 Propulsion	Safety Kleen	360	CD
132 TFW Vehicle Maintenance	Safety Kleen	120	CD
Total:		1,736	

WASTE: BATTERIES

SHOP	WASTE	QTY (BATTER- IES/YR)	DISPOSAL
132 TFW Electric/Battery	Ni-Cad Batteries	25	DRMO
132 TFW Electric/Battery	Lead Acid Batteries	30	DRMO
132 TFW Vehicle Maintenance	Batteries	24	DRMO
Total:		79	

WASTE: NDI

SHOP	WASTE	QTY (GAL/YR)	DISPOSAL
132 TFW NDI	Penetrant	20	DRMO
132 TFW NDI	Emulsifier	20	DRMO
132 TFW NDI	Developer	50	DRMO
132 TFW NDI	Mag Oil	15	DRMO
Total:		105	

WASTE: CARBON REMOVER

SHOP	WASTE	QTY (GAL/YR)	DISPOSAL
132 TFW Gun Services	Carbon Remover	600	DRMO
Total:		600	

WASTE: PAINT RELATED

SHOP	WASTE	QTY (GAL/YR)	DISPOSAL
132 TFW Structural Repair	Waste Paint & Thinner	110	DRMO
132 TFW Vehicle Maintenance	Thinner	660	DRMO
132 TFW Repair & Reclamation	Stripper	160	DRMO
Total:		930	

WASTE: SOAP

SHOP	WASTE	QTY (GAL/YR)	DISPOSAL
132 TFW AGE	Soap	60	SS
132 TFW Vehicle Maintenance	A/C Soap	360	S
Total:		420	

LEGEND: DRMO denotes Defense Reutilization and Marketing Office
SS denotes Sanitary Sewer
CD denotes Contractor Disposal
REC denotes Recycled
UIP denotes Used In Process

APPENDIX E
Master List of Shops

MASTER LIST OF SHOPS

<u>SHOP</u>	<u>CONTACT</u>	<u>BUILDING</u>	<u>PHONE NUMBER</u>
Gun Services	MSgt Davidson	124	939-8394
NDI	SSgt Easley	230	939-8367
Electric/Battery	MSgt Swenson	100	939-8355
Pneudraulics	SSgt Burney	100	939-8359
Phase Maint.	TSgt Miller	100	939-8380
Repair/Reclamation	TSgt Anderson	100	939-8357
AGE	MSgt VanWaardhuizen	104	939-8362
Structural Repair	TSgt Bosworth	315	939-8366
Fuel Cell Repair	TSgt Pasco	315	939-8363
Propulsion	SMSgt Buzzell	160	939-8368
Fuels Management	SSgt Starmer	112	939-8444
Vehicle Maint	MSgt Metcalf	105	939-8445